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PATENT SPECIFICATION

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DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Electrical Connectors for Coaxial Cables

We, AUTOMATIC METAL PRODUCTS CORPORATION, a corporation organised and existing under the laws of the State of New York, United States of America, located at 315 Berry Street, Brooklyn, New York City, State of New York, United States of America, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed to be particularly described in and by the following statement:—

The present invention relates to electrical connectors for solid and semi-solid dielectric-filled coaxial cables and more particularly to the connector to be carried by an end of such cable for detachable connection to a mating terminal on a wave signal apparatus or another cable end.

The invention provides an electrical connector for a coaxial cable including a tubular dielectric having an inner conductor therethrough and at least an outer tubular conductor covering said dielectric, an electrically conductive tubular body member for slidingly receiving therein the end portion of the dielectric and having a tapered end which enters between said dielectric and said outer tubular conductor and contacts the latter; said body member having exterior ratchet teeth adjacent said tapered end, and a sleeve to receive said tapered end therein, having at least in part, a tapered interior surface adapted to contact the exterior of the cable, when the said sleeve is placed over said tapered end, and to press same against the surface of said tapered end; said sleeve having a resilient portion terminating in a pawl formation which must be forced to come beyond said tapered end whereby said pawl formation enters between adjacent ratchet teeth and is engaged thereby to maintain the assembly whereby parts of said cable are tightly clamped in said connector.

We will now describe a preferred embodiment of this invention and its manner of use and operation in greater detail, for which we shall refer to the accompanying drawing forming part of this specification. In this drawing, similar characters of reference indicate corresponding parts in all the views.

Fig. 1 is an "exploded" view showing a cable end prepared for association with the connector, the end pin which is to be secured to the bared end of the cable's inner conductor and a fragment of the frusto-conically-ended main body member as well as the mentioned ferrule which maintains the assembly. In this view, said pin and ferrule are shown in perspective while the cable and main body member are longitudinal elevations.

Fig. 2 is an enlarged central section showing the connector and the cable at the initial stage of being associated.

Fig. 3 is a part of Fig. 2, showing the completed assembly condition.

In the drawing, the body assembly indicated generally by the numeral 15, comprises a main conductive tubular body member 16 holding the tubular insulator 17 at one end and having the frusto-conical form 18 for its other end. The remainder of the body assembly is of any conventional construction or as may suit any required installation. Our only concern with the body assembly here, is the provision of the counterbore 19 in the tubular insulator 17 and the structure shown in Fig. 3.

Said conical end 18 of the main body member 16, is provided with annular grooves 20, and on the cylindrical portion adjacent to said conical end there are annular ratchet teeth 21. Important to note, is the ferrule indicated generally by the numeral 22 which

[Price 4s. 6d.]

fits over said conical end and in cooperation therewith, effects assembly with the dielectric cable denoted generally by the numeral 23. The mouth end of the ferrule has an inward flange 24 therearound, which serves as a pawl adapted to engage a ratchet tooth 21 when forced thereon. In order to permit the annular pawl to expand and enter between such teeth, the mouth-end portion 25 of said ferrule, is relatively thin and of resilient quality. Beyond this thin-walled portion 25, the ferrule is comparatively thick and its interior has a frusto-conical surface 26 matching the frusto-conical outer surface of the end 18 of the main body member. This ferrule 22 serves as a clamping sleeve and is preferably made of plastic which may be the material known as "Delrin" (registered Trade Mark). The diameter of the tip of the pawl 24 is suitably less than the outer diameter of the ratchet teeth 21 to attain an "interference" fit.

To mount the connector on the end of the coaxial cable 23, the ferrule 22 is set on the cable so that its pawl end is nearest the cable end. The inner conductor 27 is bared sufficiently to enter the socket 28' of the pin 28 which is then soldered thereto or otherwise suitably secured. The cable's dielectric 29 is then bared a distance equal to that between the seat of the counterbore 19 to a point between the teeth 21 and the grooves 20. Now, the cable's outer conductor 30 and its insulative covering 31 are flared by pushing the cable dielectric 29 into the bore 32 of the main body member 16, into which said dielectric slidingly fits, the end of said dielectric will come up against the seat of the counterbore and stop there, while the outer conductor and its covering will receive the tapered end 18 of the main body member 16 thereinto as shown in Fig. 2. Now, the ferrule 22 is slid on the cable and set onto the tubular main body member 16 as shown in Fig. 2, and then forced onto the ratchet teeth 21 as far as it will go. It is evident that in such movement, the frusto-conical surface 26 will have tightly pressed the outer conductor 30 and its outer covering 31 against the frusto-conical end 18. Said outer conductor will be sunken into the groves 20 and the cable is thus tightly secured and properly associated with the connector as shown in Fig. 3. Of course, these connectors are made of suitable sizes for the various cables they are to be used for.

This invention is capable of numerous forms and various applications without departing from the essential features herein disclosed. It is therefore intended and desired that the embodiment shown herein shall be deemed merely illustrative and not restrictive.

WHAT WE CLAIM IS:—

1. An electrical connector for a coaxial cable including a tubular dielectric having an inner conductor therethrough and at least an outer tubular conductor covering said dielectric, an electrically conductive tubular body member for slidingly receiving therein the end portion of the dielectric and having a tapered end which enters between said dielectric and said outer tubular conductor and contacts the latter; said body member having exterior ratchet teeth adjacent said tapered end, and a sleeve to receive said taperede end therein, having at least in part, a tapered interior surface adapted to contact the exterior of the cable, when the said sleeve is placed over said tapered end, and to press same against the surface of said tapered end; said sleeve having a resilient portion terminating in a pawl formation which must be forced to come beyond said tapered end whereby said pawl formation enters between adjacent ratchet teeth and is engaged thereby to maintain the assembly whereby parts of said cable are tightly clamped in said connector.

2. A connector as claimed in claim 1, wherein said tapered end is provided with an annular groove whereinto part of the outer tubular conductor is forced upon pushing said sleeve onto the body member.

3. A connector as claimed in claim 1 or 2, wherein said ratchet teeth and pawl formation are annular.

4. A connector as claimed in claim 1, wherein said tapered end and said tapered surface are frusto-conical, said tapered end being provided with at least one groove, said groove, ratchet teeth and pawl formation being annular, and the cross-section of the body member where it has the ratchet teeth being circular.

5. A connector as claimed in claim 1, 2, 3, or 4, wherein said sleeve is of plastic material.

6. A connector as claimed in any of claims 1 to 5, wherein said sleeve is thinner near said pawl formation than at that part thereof which has the interior tapered surface; said thinner portion affording resilient quality.

7. An electrical connector substantially as herein described and illustrated in the accompanying drawings.

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Agents for the Applicant(s).

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1,087,228
1 SHEET

COMPLETE SPECIFICATION

This drawing is a reproduction of the Original on a reduced scale.

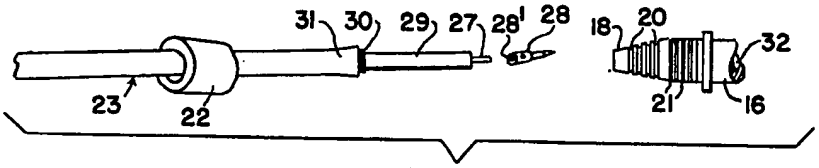

FIG. 1

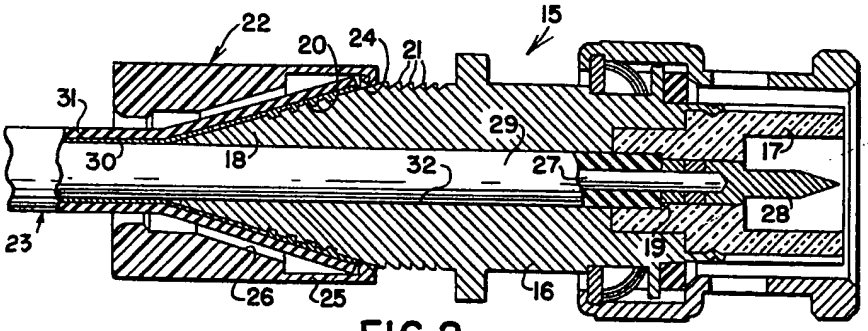

FIG. 2

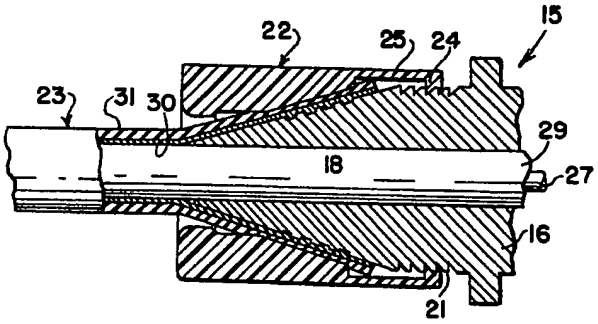

FIG. 3